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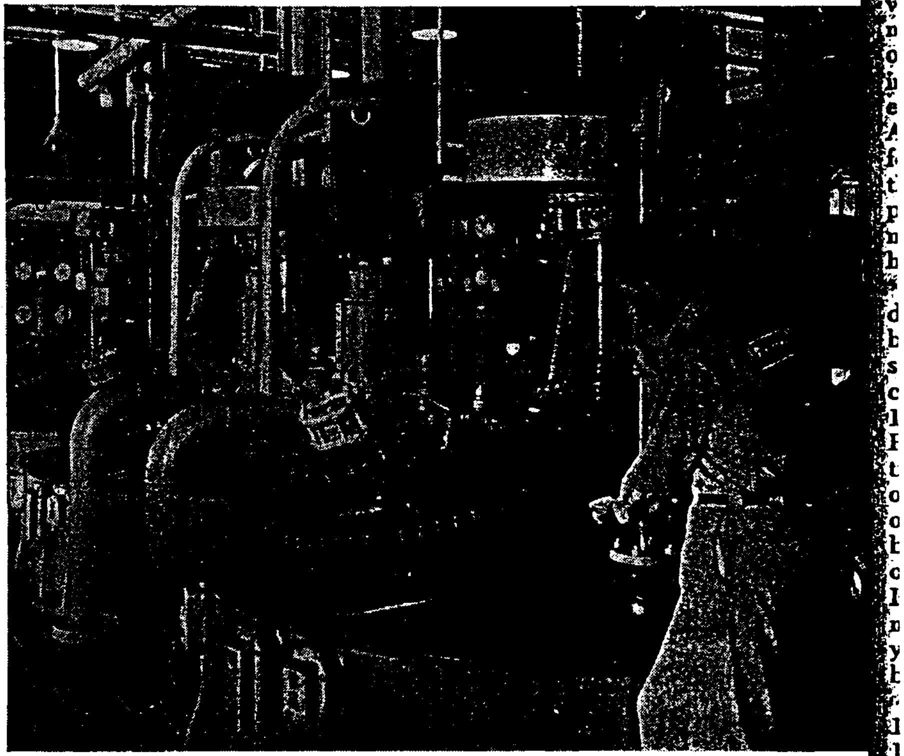
PVC producers see good business ahead

Optimism for polyvinyl chloride based on tight market, high plant utilization, increasing production, and firm prices

"Everything's tight. You can't buy monomer. You can't buy polymer. I'm afraid to answer my phone because I can't fill any more customer orders. And most other producers don't even have product to swap at market prices." That's how one polyvinyl chloride product manager sums up his view of the business.

Although the tight supply-demand balance is bringing some operational problems, it does, nevertheless, indicate that the 1969–70 business outlook for PVC producers is shaping into the healthiest one of the past three years. Assuming continuing growth in the nation's economy, the PVC outlook runs like this:

- The supply-demand balance will remain extremely tight through 1969 and moderately tight through 1970.
- Utilization of plant capacity will average 90% or more this year and next.
- Production will be up at an annual rate of 12%, to about 2.66 billion pounds in 1969 and 3.0 billion pounds in 1970.
- Price structures are generally firm and producers will likely announce price increases this fall for general-purpose resin now selling at 10.5 cents a pound in bulk.



PVC REACTOR. Firestone worker adjusts valve on 3500-gallon reactor in whic vinyl chloride monomer is polymerized at company's Pottstown, Pa., plant

Given such good business conditions after the 1967–68 period of overcapacity and price cutting, producers are optimistic, but cautiously so, about the near-term outlook. Union Carbide's Gordon P. Bigelow, product manager of vinyls, expresses what seems to be the industry's mood: "There's a little life on the horizon . . . but there are indicators that the economy might slide."

Even if consumer demand for vinyl products is weakened for a short time, the resin outlook is still good, because the current shortage of monomer is the really critical factor in today's tight supply-demand balance. This shortage is limiting the production of polymer and will continue to limit it until mid-1970, according to all monomer producers. What will relieve this shortage about mid-1970 will be new monomer capacity, in particular Dow's 800 million pound-a-year Oyster Creek, Tex., plant, which the company began to bring on stream in June and will continue to increase to full capacity stepwise int next year.

The monomer shortage is somewha puzzling, though, in view of wha appears to be an industry overcapac ity. A C&EN check of all monome producers shows that their averag operating capacity for 1969 is 4. billion pounds (excluding the Do startup). At best, monomer produc tion will approach 3.0 billion pound this year, of which 90%—2.7 billio pounds—will go to domestic PV makers, and 10%—300 millio pounds—will go to currently stron export markets. Based on thes figures, plant utilization for 19 would be only 75%.

Monomer producers, howeve claim that they're operating the plants all out. They estimate pla utilization this year at about 90% This means that the effective opera ing capacity for 1969 must be lowere from 4.0 billion pounds to 3.4 billio pounds to arrive at the 90% figure This is quite a drop from namepla

Polyvinyl chloride markets are more diverse than any other large-volume thermoplastic

Market	Consumption (per cent)
Calendering	18%
Extruded products	14
Wire and cable	12
Calendered flooring	10
Film and sheet	6
Paper and textile coating	5
Sound records	5
Plastisols	5
Protective coatings and adhesives	4
Injection and blow molding	3
Coated flooring	2
Other domestic uses	11
Exports	5

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capacity, but conceivable nevertheless, as producers continue to phase out acetylene units and overstate capacity to discourage competition.

The tight supply-demand balance for monomer is supporting the market selling price of 4.5 cents a pound in tanks on long-term contracts. One downward pressure on this selling price is coming from the Federal Trade Commission's 1967 consent order which requires that Continental Oil make available for five years one third of its vinyl chloride production to nonintegrated PVC producers at the lowest price offered any other customers. Another downward pressure is the forecast for lower-cost ethylene at less than 3.0 cents a pound, even though prices for chlorine, which constitutes nearly 60% of the polymer weight, have recently moved up incrementally.

Slight discrepancy. While producers figure that plant utilization will be about 90% for 1969, there is a slight discrepancy between nameplate capacity and estimated production for 1969. A C&EN inquiry of all 23 PVC producers shows that the industry claims a year-end 1969 capacity of 3.7 billion pounds and an average operating capacity for the year of 3.2 billion pounds. These figures appear overstated, as do the monomer figures. It's likely that with production estimated at 2.66 billion pounds this year, average operating capacity will be about 3.0 billion pounds.

During the first four months of 1969, polymer production increased 13% over the same period last year, with some changes in the polymerization mix. Suspension homopolymer accounts for 68% of production so far this year, up from 63% last year. Suspension copolymer accounts for 18% so far this year, down from 23% last year. Dispersion (paste) resins remain unchanged at 14%. In spite of the generally good outlook, producers still have problems which they're worried about.

Wide mix. B. F. Goodrich, which makes about all types and grades of PVC resins, indicates concern about having to produce such a wide product mix.

Hooker's Bill Daly, business manager for chemicals and polymers, says that his company is worried that its three fastest growing markets—rigid specialties, packaging sheet, and casting—might slow down with the overall economy.

And about pricing, Dick Kulick, vice president of marketing for Tenneco's plastics division, comments that even with last January's price increases and with good growth this year, the company feels there should be more of an increase in the average selling price for its homopolymer resin mix.

Vinyl chloride monomer capacity will total 4.8 billion pounds at the end of 1969

Producer	Location	Capacity (millions of pounds)
Allied Chemical	Geismar, La.	300
American Chemical	Watson, Calif.	175
Continental Oil	Lake Charles, La.	600
Dow Chemical	Freeport, Tex.	180
	Oyster Creek, Tex.	800*
	Plaquemine, La.	300
Diamond Shamrock	Deer Park, Tex.	100
Ethyl Corp.	Baton Rouge, La.	300
	Houston, Tex.	200
B. F. Goodrich Chemicals	Calvert City, Ky.	1000
Monochem	Geismar, La.	300
PPG Industries	Lake Charles, La.	300
Tenneco	Houston, Tex.	255
Union Carbide	Texas City, Tex.	150**
	Total	**4,810**

* Dow just started up part of its Oyster Creek plant in June and is making shipments.

** Union Carbide will phase out its Texas City plant by early 1970 and purchase merchant monomer.

Polyvinyl chloride capacity will total 3.7 billion pounds at the end of 1969

Producer	Location	Capacity (millions of pounds)
Airco	Calvert City, Ky.	120
Allied Chemical	Painesville, Ohio	200
American Chemical	Long Beach, Calif.	70
Atlantic Tubing	Cranston, R.I.	100[a]
Borden	Illiopolis, Ill.	
	Leominster, Mass.	250 (combined total)
Continental Oil	Aberdeen, Miss.	155
Diamond Shamrock	Deer Park, Tex.	
	Delaware City, Del.	240 (combined total)
Escambia Chemical	Pensacola, Fla.	50
Ethyl Corp.	Baton Rouge, La.	150
Firestone Tire & Rubber	Perryville, Md.	115
	Pottstown, Pa.	125
General Tire & Rubber	Ashtabula, Ohio	75
B. F. Goodrich	Avon Lake, Ohio	
	Henry, Ill.	
	Long Beach, Calif.	
	Louisville, Ky.	
	Niagara Falls, N.Y.	
	Pedricktown, N.J.	630[b] (combined total)
Goodyear Tire & Rubber	Niagara Falls, N.Y.	80
	Plaquemine, La.	40[c]
Great American Plastics	Fitchburg, Mass.	40
Hooker	Burlington, N.J.	70[d]
Keysor Chemical	Saugus, Calif.	60
Monsanto	Springfield, Mass.	150
Olin	Assonet, Mass.	125
Pantasote	Passaic, N.J.	
	Pt. Pleasant, W.Va.	120 (combined total)
Stauffer	Delaware City, Del.	80[e]
Tenneco	Burlington, N.J.	140
	Flemington, N.J.	75
Union Carbide	Texas City, Tex.	
	South Charleston, W.Va.	320 (combined total)
Uniroyal	Painesville, Ohio	135
	Total	**3,715**

[a] Atlantic Tubing's capacity is out of operation as the result of a fire but the company plans to rebuild capacity—how much is still uncertain.

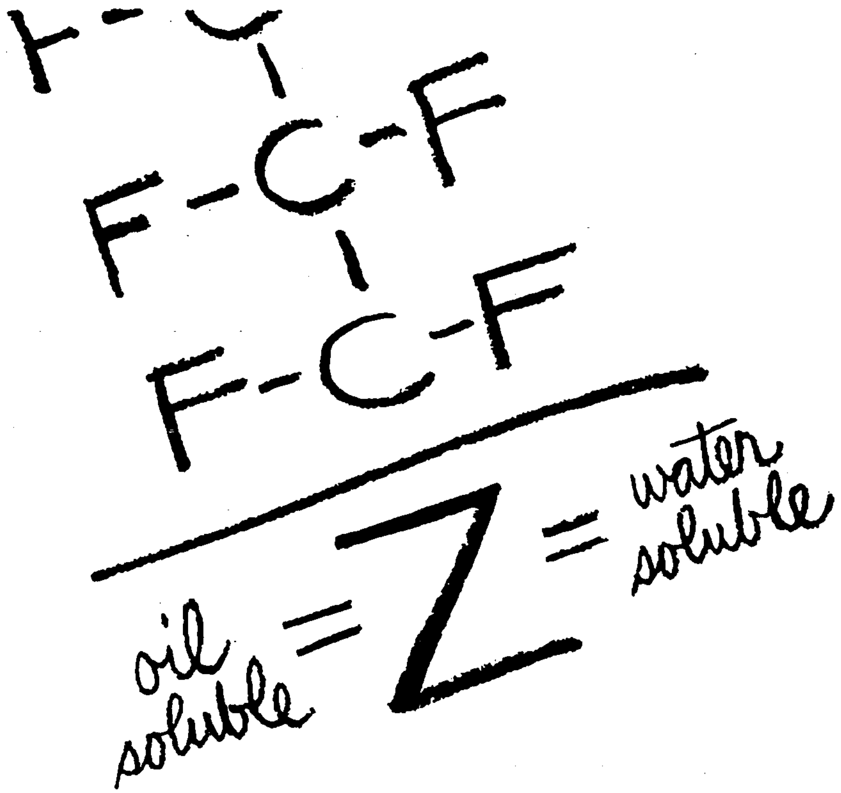
[b] Goodrich will have the Pedricktown plant on stream by the end of 1969.

[c] Goodyear will expand the Plaquemine plant to 80 million pounds a year in late 1970.

[d] Hooker will expand the Burlington plant to 120 million pounds a year in 1970.

[e] Stauffer will expand the Delaware City plant to 150 million pounds by the end of 1970.

Note: Dow Chemical will shut down its Midland, Mich., plant, rated at 60 million pounds a year, by the end of 1969 and thus end its PVC operations.



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Foreign licenses make more, satisfy less

A rich type of decline may be und way in U.S. companies' granting l censes to foreign firms. A surve of 191 companies on the subject b the National Industrial Conferen Board accents pessimism on the futu of the license, much used by U. chemical companies (C&EN, May 2 1968, page 62).

The outward signs seem ro enough. Far more U.S. companies a licensing abroad than did a decad ago. Licensing income has swelle from $420 million in 1961 to $78 million in 1967, the latest year f which figures are available. Net i come from licensing is often extr ordinarily high; 40% of the respondin companies told NICB they clear mo than 75% on their gross return Fully 75% of the companies repo satisfaction with returns from foreig licensing activity. And governme sources sing praises for the licens royalties' effect on the balance payments.

Shifting ground. The corpora ground is shifting under this surfac however. NICB cites a study b Booz, Allen & Hamilton, an intern tional consulting firm, showing th the number of new licensing agre ments has declined nearly 60% sin 1961. These agreements made u only 19% of companies' foreign bu ness activities in 1967 (the rest bein investment and expansion), compare with 29% six years earlier.

Furthermore, NICB breaks dow Department of Commerce data licensing income from 1961 to 196 which show that the biggest increas from $157 million to $438 million, h come in licenses to companies' ow subsidiaries, affiliates, and branche The rise in income from independe foreign firms has been smaller, fro $263 million to $348 million.

Priorities change. Behind the bits of evidence, NICB finds a maj change in company priorities in doi business abroad. "About half the co panies indicate that they are, as matter of policy and practice, movi away from licensing and toward joi or wholly owned ventures overseas the survey points out. "Because the progressive mingling and integr tion of licensing with other types foreign operations . . . licensing gradually losing its identity as a sep rate way of doing business overseas."

Flat dissatisfaction. A quarter the companies in the survey stated flat dissatisfaction with returns of censing programs abroad. In additio many companies pleased with licens ing had quibbles. For example, o chemical company declares: Our policy is that licensing is the resort in most instances. We pre- joint ventures in order to have a partner rather than a competitor at the expiration of a licensing agreement."

NICB says that the results seem to warrant the conclusion that there is a "strong preference for equity control or equity participation, even among licensing companies that have no real complaints about their foreign licensing experience."

More explanation for this turning away from an apparently lucrative operation is the relative size of the proceeds. Although licensing makes up over half of foreign income for about one company in five, more than half the other companies get less than 10% of their total foreign revenues from licensing.

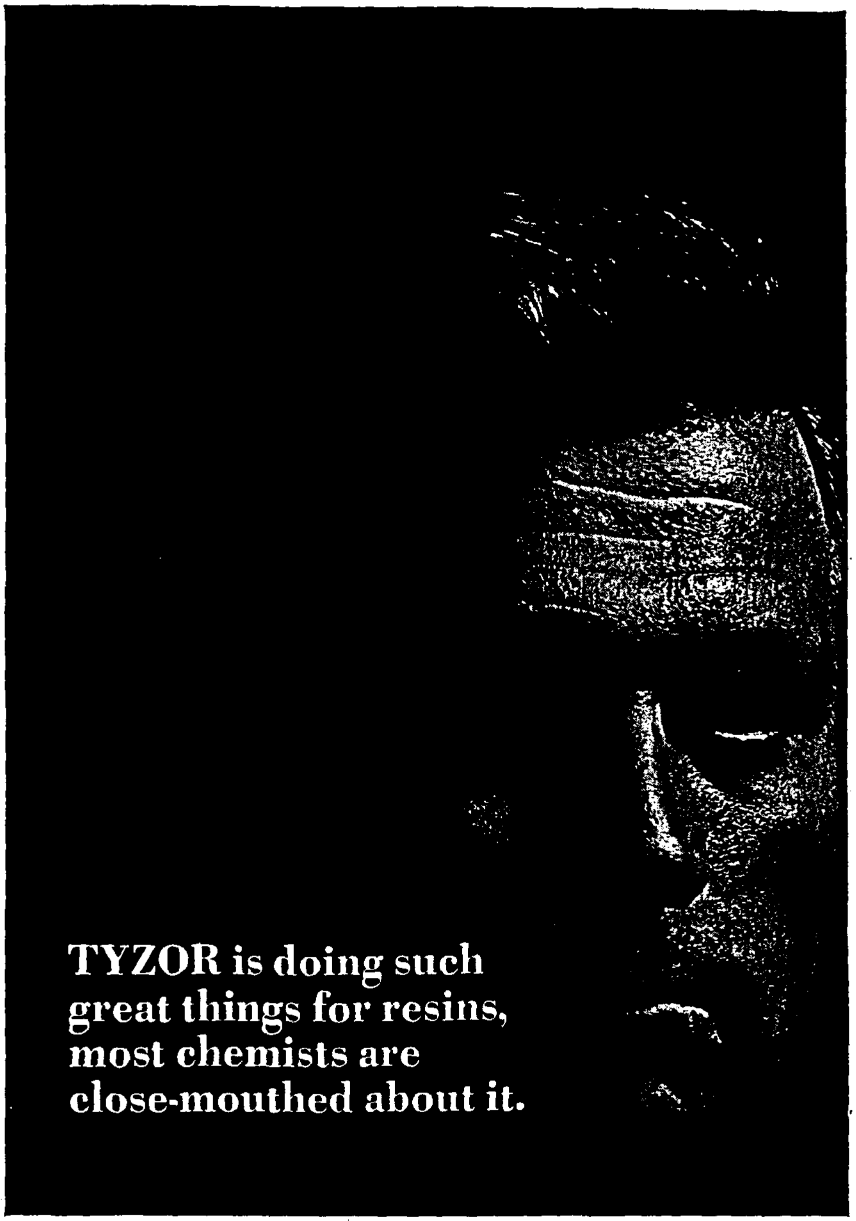
The corporate status assigned foreign licensing is also slight. Only 19% of *companies* put a full-time licensing coordinator or manager in charge of this activity. Fewer than half the companies consider foreign licensing a separate operating and income-generating activity.

"Only a small minority of U.S. licensors," the report states, "apply to eir licensing activity the same prof- ability yardsticks that they apply to other operating activities."

Chemical licenses. In this back-burner position, chemical licenses have done relatively well. The Booz, Allen & Hamilton survey ranks them fourth in number behind machinery, electrical machinery, and transportation equipment licenses from 1961 to 1967. At 150, chemical licenses make up 9% of 1745 total licenses in the consultant's survey. Other relevant categories include textiles with 74, scientific instruments with 57, paper and allied products with 45, rubber and plastic products with 45, and petroleum with 13.

The character of licensing firms has changed considerably in the decade, according to Booz, Allen & Hamilton. The contribution of large companies (those with more than $500 million sales) has climbed from 13 to 25% to offset the traditional dominance of the field by smaller companies.

Prime target. The prime target for licenses has been Europe. In 1957, total receipts from all types of direct investment abroad (including management fees and service charges) ran $238 million, with only $41 million from Europe. The European contribution 10 years later had soared to $473 million out of a total of $1.1 billion. For royalties, license fees, and rentals in 1967, Europe was by far the major factor with $244 million out of a total of $438 million.



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Isopentane	▨	▨	☐
Normal Pentane	▨	▨	☐
2,2-Dimethylbutane*	▨	▨	▨
2,3-Dimethylbutane*	▨	▨	▨
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DIOLEFINS			
Butadiene-1,3	▨	☐	
2-Methylbutadiene-1,3	▨	☐	
Pentadiene-1,3			90
AROMATICS			
Benzene	▨	▨	
Toluene	▨	▨	
Ethylbenzene	▨	▨	▨
ortho-Xylene	▨	▨	
para-Xylene	▨	▨	▨
meta-Xylene	▨	▨	▨
1,2,4-Trimethylbenzene	▨	▨	▨
Isopropylbenzene	▨	▨	▨
n-Propylbenzene			▨
Isobutylbenzene	▨	▨	▨
sec-Butylbenzene	▨	▨	▨
tert-Butylbenzene	▨	▨	▨
n-Butylbenzene	▨	▨	▨
1-Phenylbutene-2			▨
sec-Amylbenzene		▨	▨
mixed Amylbenzenes		▨	

☐=commercial quantities ▨=develo iental quantities

*Other grades available in :ommercial quantities.

Analytical Standards, Hyd ocarbon Mixtures, Instrument Grade Gases, Natural Gas, Special Solvents, Ref rence Fuels, Normal Propyl Mercaptan, Normal Butyl Mercaptan, Difunctional I ercaptans, Tertiary Aliphatic Mercaptans, Ditertiary Aliphatic Disulfides, Polym rization Grade Olefins and Diolefins, Aerosol Propellants, Spectro Grade Solve ts, Copper Sweetening Reagent. Sulfolane and other Cyclic Sulfones.

Special Products Division
Chemical Department
PHILLIPS PETROLEUM COMPANY
Bartlesville, Oklahoma 74003
Phone 918 336-6600

PHILLIPS 66

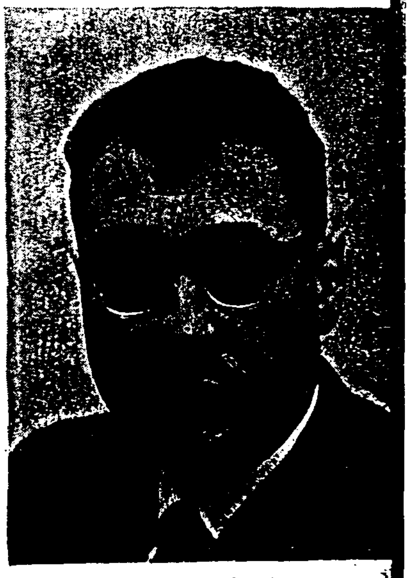
At Phillips 66 it's performance that counts

Confidential employmen service gets larger test

Beyond their primary purpose of tra
mitting the latest in chemical researc
development, management, and ma
keting techniques, ACS nation
meetings are attended by those co
templating job changes. Next mont
158th ACS National Meeting in Ne
York City should prove no exceptio
One somewhat new wrinkle, howeve
is ACS's Confidential Employme
Finders' Service. CEFS will be tri
out for the second time—but with o
major change.

What's changed is that the app
cant's identity will not be revealed u
less he decides to contact an interest
employer. The system will now wo
this way: The applicant first fills o
an application form in which he do
not identify himself and specifies tho
employers whom he doesn't want
see the form. Employers then r
view the forms at the meeting a
indicate to the CEFS staff those a
plicants they'd like to contact or int
view at the meeting. CEFS will n
identify the applicant at this poin
as it did at the 157th ACS Natio
Meeting in Minneapolis—but will co
tact the applicant and inform him
the company's interest.

Vulnerability. "The way the servi
worked in Minneapolis," says AC
personnel officer Damon N. Cordo
"left the applicant somewhat vuln
able." Companies surveyed after t
first trial in Minneapolis tend to agr
Six specifically suggested changing t
original plan to the current form. O
company official observed that lo
tion and background information gi
too much away in some cases, a



Damon N. Cordom
Even more confidential

Employer data

Total number of participating companies	67
Number of companies making inquiries	34
Total number of inquiries made	223
Range in number of applicants requested by individual companies	1-24

Companies	Applicants requested
8	1
2	2
1	3
3	4
7	5
4	6
3	7
4	10
1	19
1	20
1	24

he asked that location data be deleted to avoid embarrassing the applicant.

Another company official said that to avoid browsing through applicant identifications, employers should be obliged to contact all applicants identified, or explain any exception to CEFS.

The confidential nature of CEFS might be similarly abused by employment agencies or management consultant firms. "Our fear is that should such firms get a man's name, they might market it in any way they see fit," ACS's Cordom points out. But CEFS experienced no such trouble at the Minneapolis meeting, he says, and he hopes that the New York meeting will be no different in this respect.

More contacts. The New York meeting will be different, however, in that more chemists, chemical engineers, and representatives from companies and academic institutions will be attending than at the Minneapolis meeting. Thus New York City should provide a larger test of the service. Mr. Cordom projects two to three times the response seen in Minneapolis—50 applicants and 67 employers registered—although he observes that this projection may be overly optimistic because of the soft job market for chemists right now. New York City is also a larger and different metropolitan area than is Minneapolis.

CEFS also differs from the National Employment Clearing House conducted by ACS at national meetings. NECH is primarily designed for those just out of college or graduate school, or without jobs, or employed but unconcerned whether their current employers find out they are looking for new jobs. NECH makes no charge to employer or applicant for registering. CEFS, on the other hand,

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BUSINESS PERSPECTIVES

By DAVID M. KIEFER, Senior Editor

The stake for business in looking beyond tomorrow

What will our world be like in 1980? Or the year 2000? What corporations will still be in business? What products will they make? What problems must their managements cope with?

Nobody really knows, of course. But interest in long-range forecasting and planning is spreading. This interest has been spawned during the past decade or so largely in several think tanks—private, independent consulting and research centers oriented toward broad studies of technological, economic, and social change. Now, however, it is increasingly spilling over into government and business.

Just last month, President Nixon set up within the White House his own in-house think tank, as it were: the National Goals Research Staff. This new group has been "charged with the long perspective." Among its functions are forecasting future social developments and their consequences as far out as the year 2000 and evaluating the possible goals or choices that lie before us. A week later the President focused on a specific but highly significant aspect of the future when he proposed that Congress establish a Commission on Population Growth and the American Future, responsible for studying the course of demographic change between now and the year 2000 and how such change will affect government activities and public policy.

Despite this apparent official stamp of approval, however, much of the business world remains skeptical of any such long reach into the future. And not without reason, certainly. Long-range forecasting still has a considerable aura of the imaginary, the unscientific, and the irrational about it. One man's guess might seem as good (or bad) as another's. Businessmen, to be sure, have become convinced of the worth of a carefully constructed plan looking forward two, three, or five years; this encompasses the time required to design and build a new plant or to carve out the market for a new product. Plans extending out to 10 years, too, are now increasingly common. Such plans, though, tend to be rather nebulous; the paths to such a distant goal remain obscure and ill-defined.

Yet long-range forecasting and planning is being done—and will be done even more in the future. The techniques it employs admittedly are still crude. Technological forecasting, although increasingly in vogue, is a discipline little more than a decade old and is as roughhewn today as economic forecasting was half a century ago. Political and sociological forecasting are at an even more primitive stage. Nevertheless, the foundations of a theory and a methodology for meaningful long-range forecasting are starting to emerge.

And it would be short-sighted indeed for business organizations to ignore them or to relegate them solely to the nonprofit research organizations, the foundations, the universities, or the Federal Government. Businessmen, like most of the rest of society, long were willing to treat science and technology as a bountiful cookie jar into which they could dip at will to use or reject whatever goodies they found there. Now, however, technological progress more and more is a directed effort. Society asks for inventions and technological developments—the atomic bomb, a lunar landing, pollution control—on a made-to-order basis. Rather than accepting passively what God hath wrought, it is drawing up specifications and decreeing what shall—or shall not—be wrought. Corporations have preferred to determine for themselves what products they should produce, and where, and how—with little thought for their relation to national goals or their technological or sociological impact on the national environment. This may no longer be good enough in a changing climate. The company that continues to do so, therefore, may find itself, the day after tomorrow, technologically sophisticated, managerially astute—and prematurely obsolete.